

# SGI NUMA Linux memory usage routine callable from a user's application

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SGI (Silicon Graphics Inc.) has a routine known as `get_weighted_memory_size` in its `libmemacct` library that can be called from a user's application to determine memory usage at that point in the application. A usage example provided by Bob Ciotti and Johnny Chang is shown below:

First the C code from Bob Ciotti for invoking the function and for providing a C interface callable from Fortran:

```
#include <unistd.h>

long
__gwms (pid_t pid)
{
    /* I guess no one is suppose to know about this one ... */
    extern long get_weighted_memory_size (pid_t pid);
    long w_rss;

    if ((w_rss = get_weighted_memory_size (pid)) < 0) {
        if (0) {
            /*
             * most likely the process you were asking about
             * * terminated ---
             */
            perror ("get_weighted_memory_size: ");
        }
        return -1;
    }
    return w_rss;
}

/* FORTRAN and C interfaces */

/*
 * FORTRAN - gwms(size) - return bytes used in size for calling process
 */

void
gwms_(long *size) {*size = __gwms(getpid());}

/*
 * C - gwms() - returns bytes used by calling process
 */
```

long

```
gwms() {return(__gwms(getpid()));}
```

Next is the Fortran code (from Johnny Chang) showing how to use the C-Fortran interface to determine memory use:

```
program testgetmemuse
! ifort -o testgetmemuse testgetmemuse.f90 getmemoryuse.o -lmemacct
real(kind=8), allocatable :: a(:, :)
integer(kind=8) :: memuse_in_bytes
nmax = 1024
call gwms(memuse_in_bytes)
print *, 'memuse(bytes) before allocate = ', memuse_in_bytes

allocate(a(nmax, nmax))
call gwms(memuse_in_bytes)
print *, 'memuse(bytes) after allocate = ', memuse_in_bytes

a = 1.0
call gwms(memuse_in_bytes)
print *, 'memuse(bytes) after filling a = ', memuse_in_bytes
end
```

The comment line in the above Fortran code shows how to build the example and link with libmemacct. It assumes that the C code is stored in a file called getmemoryuse.c and has been pre-compiled by an appropriate C compiler to generate getmemoryuse.o. It also assumes that the Fortran code is stored in a file called testmemuse.f90.

Please note that libmemacct is SGI proprietary product and it is thus not available on other Linux platforms.